QUALITY ASSURANCE REPORT/QUALITY CONTROL REPORT

		SE/QA/PR/239/2023-24, DATE: 19/10/23
Name of Work	:	Construction of Samudhaya Bhavana Building and Bus shelter & providing grill fencing and other development works at 407 SFS park, 707 SFS park, Sri madivala machideva park and Major Sandeep Unnikrishnan Park of Yelahanka Assembly Constituency Under Amrutha Nagarothana Grants (PACKAGE-02). Estimated cost 1000.00 Lakhs
Job Code	:	003-23-000002
Bill No.& Amount	:	**2nd & Final Bill. Rs. 1,97,52,437.00 (Including GST)**
Name of Agency	:	**M/s LNR Ventures Constructions Pvt Ltd. (Sri. K Lakshmi Narayana Reddy)**
Type of Test Performed	:	Rebound Hammer test as per IS13311-(2)-1992, Ultrasonic Pulse Velocity test as per IS 15516 (part 5) Sec-1 2018
Materials on which Tests Was Performed	:	1. RCC Beam (M25) 2. RCC Column (M25) 3. Granite Slab 4. Vitrified Tiles
Officers present during inspection	:	1. Sri. Anjaneyalu. B.R. AE- Project Division Yalahanka zone 2. Sri. K.M.Yadukrishna AEE-Quality Assurance
Third Party Consultants	:	**Tejus Consultants.**
Observations	:	➢ NDT (Rebound hammer test) & Ultrasonic Pulse Velocity test conducted by Project Management Consultants representative at random locations in presence of AE (Project Division Yalahanka zone), along with AEE QA division. ➢ The Rebound Hammer Test and Ultrasonic Pulse Velocity test was conducted randomly on RCC Columns (M25), RCC Beams (M25), The readings and results are recorded by the PMC consultants. ➢ The readings of Rebound Hammer Test & Ultrasonic Pulse Velocity test results are tabulated and analysis of test results done by PMC is here by furnished. ➢ Test reports for Vitrified Tiles & Granite stone slab are obtained from Bangalore University for the parameters mentioned in the table-04 to 05. ➢ The location wise test results are reproduced in the tables shown below.
Test Locations	:	**Location 1**: Samudhaya Bhavana Building Attur.

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Table-01: Rebound Hammer Test Results

Sl No	Landmark	Member	Rebound Hammer Number	Average Reading	Compressive Strength (N/mm2)	Impact Direction
Sample Tested Location At Samudhaya Bhavana Building Attur. (Ground Floor)						
1	Ground Floor	Column – 6 (M25)	36	35	27.46	Horizantal
2			34			
3			32			
4			36			
5			35			
6			34			
1		Column - 9 (M25)	37	34	25.5	Horizantal
2			32			
3			33			
4			35			
5			34			
6			34			
1		Column – 8 (M25)	36	36	28.44	Horizantal
2			35			
3			34			
4			36			
5			37			
6			36			
1		Beam – 2 (Grid D to E) (M25)	32	34	25.5	Horizantal
2			33			
3			35			
4			34			
5			35			
6			34			

Table-02: Rebound Hammer Test Results

Sl No	Landmark	Member	Rebound Hammer Number	Average Reading	Compressive Strength (N/mm2)	Impact Direction
Sample Tested Location At Samudhaya Bhavana Building Attur. (First Floor)						
1	First Floor	Beam 4 Grid b/w 2 to 3 (M25)	32	34	25.5	Horizantal
2			34			
3			32			
4			36			
5			37			
6			33			
1		Column – 9 (M25)	35	36	28.44	Horizantal
2			36			
3			37			
4			33			
5			35			
6			37			
1		Column – 6 (M25)	33	35	27.46	Horizantal
2			34			
3			36			
4			35			
5			34			
6			35			

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1	First Floor	Beam – 2 (Grid A to B) (M25)	34	34	25.5	Horizantal
2			35			
3			35			
4			34			
5			35			
6			33			
1		Column – 15 (M25)	34	35	26.48	Horizantal
2			36			
3			35			
4			33			
5			35			
6			36			

Table-03: Ultrasonic Pulse Velocity Test Results for Location At Samudhaya Bhavana Building Attur.

Sl. No.	Structural Member and Location	Mothod of Testing	Path Length In mm	Time Taken (μ)sec	Pulse Velocity in m/sec	Quality Grade Of Concrete
1	Ground Floor C-6 (M25)	Direct Method	300	79.5	3773.00	Good
2	Ground Floor C-9 (M25)	Direct Method	300	63.96	4690.00	Excellent
3	Ground Floor Beam - 2 (Grid b/w D to E) (M25)	Direct Method	200	41.96	4766.00	Excellent
4	First Floor C-15 (M25)	Direct Method	230	47.42	4850.00	Excellent
5	First Floor C-15 (M25)	Direct Method	300	61.98	4840.00	Excellent
6	First Floor Beam -2 (Grid b/w A to B) (M25)	Direct Method	200	62.73	4782.00	Excellent

Table-04: Test Report for Granite stone Sample

SI NO	Test conducted	Test results	Requirements as per IS:14223,Part-1:1995, Table.1	Reference
1	Dry Density	2.625 g/cc	2.60-2.68	---------
2	Water Absorption	0.38%	0.50, max	IS:14223(partI):1995
3	Specific Gravity	2.74	2.75, min	IS9143-1979
4	Moisture Content	0.06%	0.15,max	IS 13030-1991
5	Tensile Strength	134.0 Kg/cm^2	90.0 Kg/cm^2,min	IS 13365(partI)-1998
6	Moh's Hardness	6.3 on a scale of 10	6-7	--------

Table-05: Test Report for Vitrified Floor tiles

Sl.No	Details of Test	Test Results	Requirements as per Specifications
1	Deviation in Length and width	+/- 0.13 %	+/-0.6%
2	Deviation in Thickness	+/- 1.4%	+/- 5%
3	Straightness of Sides	+/- 0.12%	+/- 0.5%
4	Rectangularity	+/- 0.24%	+/- 0.6%
5	Surface Flatness	+/- 0.15%	+/- 0.5%
6	Surface Quality	98.0	95% min
7	Water Absorption	0.042%	Less than 0.5%
8	Scratch hardness of surface (Moh's Scale)	+6.0	≥ 6.0
9	Flexural Strength (Avg MOR)	46N/mm^2	Not less than 35.0 N/mm^2
10	Breaking Strength	1785 N	Not less than 1300 N

Conclusion:

The file containing **2nd&Final bill** has been submitted for the above work to QA department on **20.09.2023** requesting for spot inspection. Engineers of QA/QC division have visited the work spot on **10.10.2023 & 13.10.2023**

PMC team was instructed to assess the strength of concrete used RCC Column (M25), RCC Beam (M25) by Rebound Hammer Test. The Rebound hammer test were conducted by PMC in presence of engineer in charge of work.

From the test results furnished by PMC, it is concluded that the results of the samples collected are in accordance with the standards/ specifications mention in the IRC codes. However, the results submitted by the PMC have been reproduced here with for further needful action. The results checked by QA/QC relates only for item tested in the particular location randomly.

Engineer in charge of work shall ensure that work executed as per this bill is not claimed in any other bill /work or else Engineer in charge of work shall be held responsible.

Further, QA/QC directs the Engineer in-charge of the work that all materials used for the work shall be inspected, tested and accepted as per the relevant specifications before incorporation in the work. The frequencies and methods of sampling and testing materials, including those required for definite purpose and not covered by MORT&H specifications shall be in accordance to the relevant IRC or BIS or AASHTO/ASTM/BS standards in order of priority.

All materials or work not conforming to the requirements of the specifications shall be considered unacceptable and rejected. The unacceptable materials or works that are rejected shall be immediately removed unless the defects are corrected and approved by the engineer in-charge of work.

The concerned Engineer in charge of the work shall follow the direction issued by Chief Commissioner Letter number dated 01.08.2022 and 14.09.2022 and take necessary action as appropriate in accordance with the law.

Note: -

This report by OA/OC is pertaining to the work carried out in 2nd & Final bill only.

Engineer in charge of work and Agency shall ensure that if any damages or defects occur pertaining to the executed work within the Defect Liability period (DLP), The same shall be rectified immediately on top priority without fail.

Engineer in charge of work shall ensure that any changes/ modification/change in location in the sanctioned estimate to be got approved by competent

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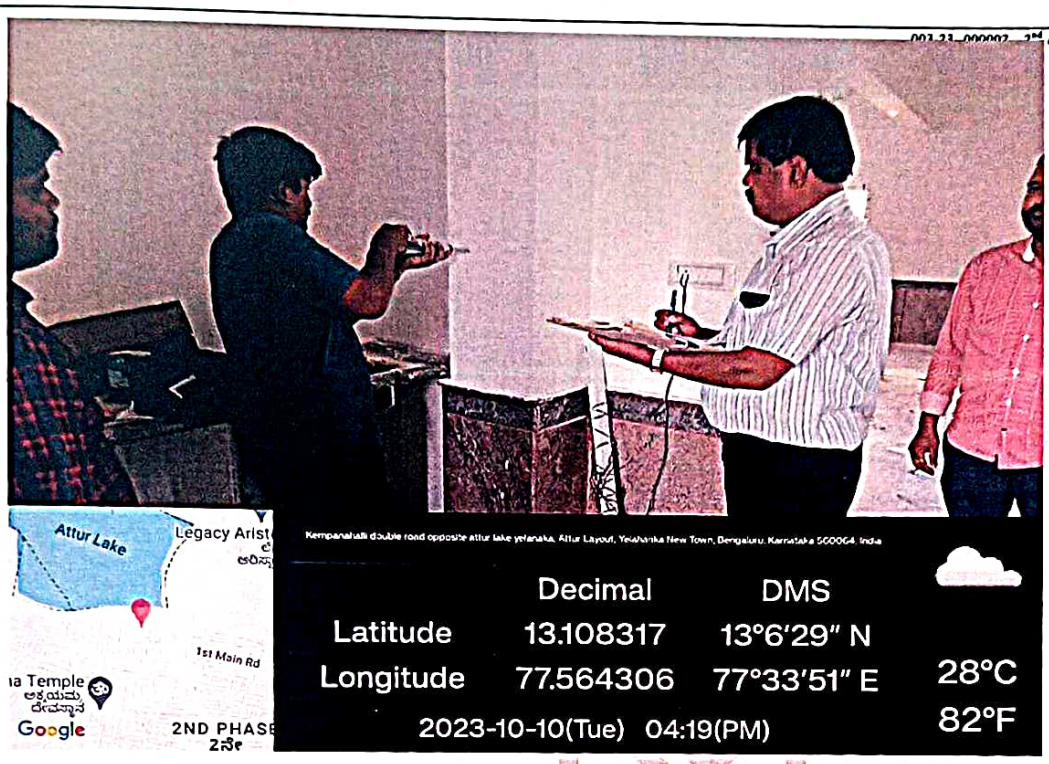

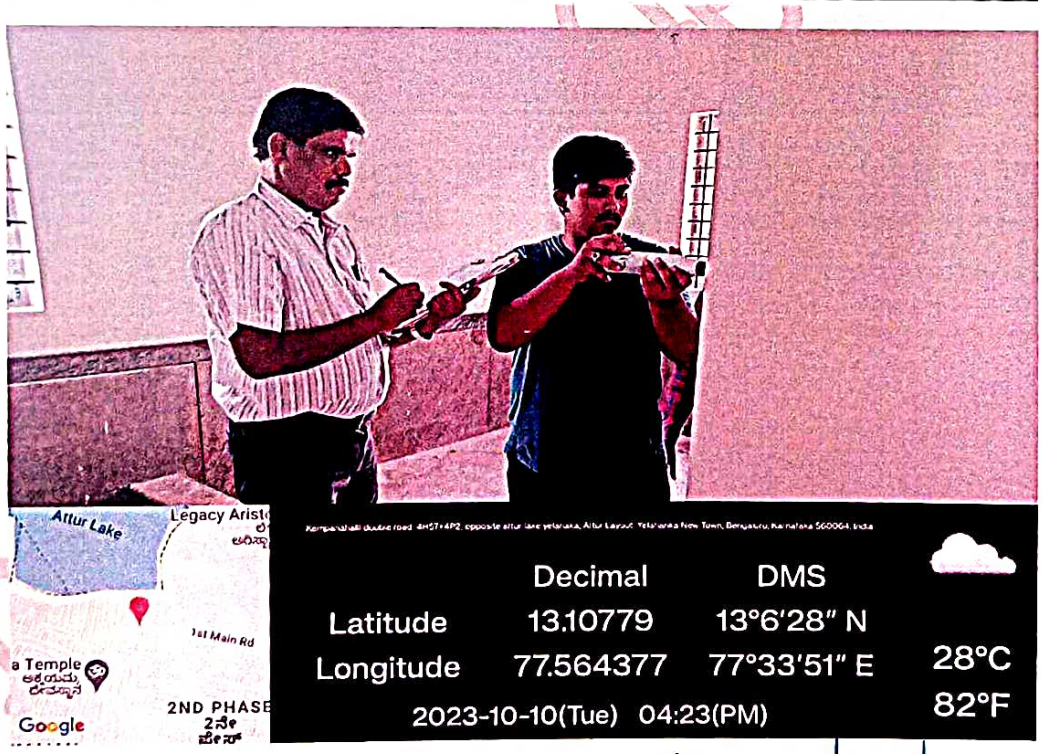

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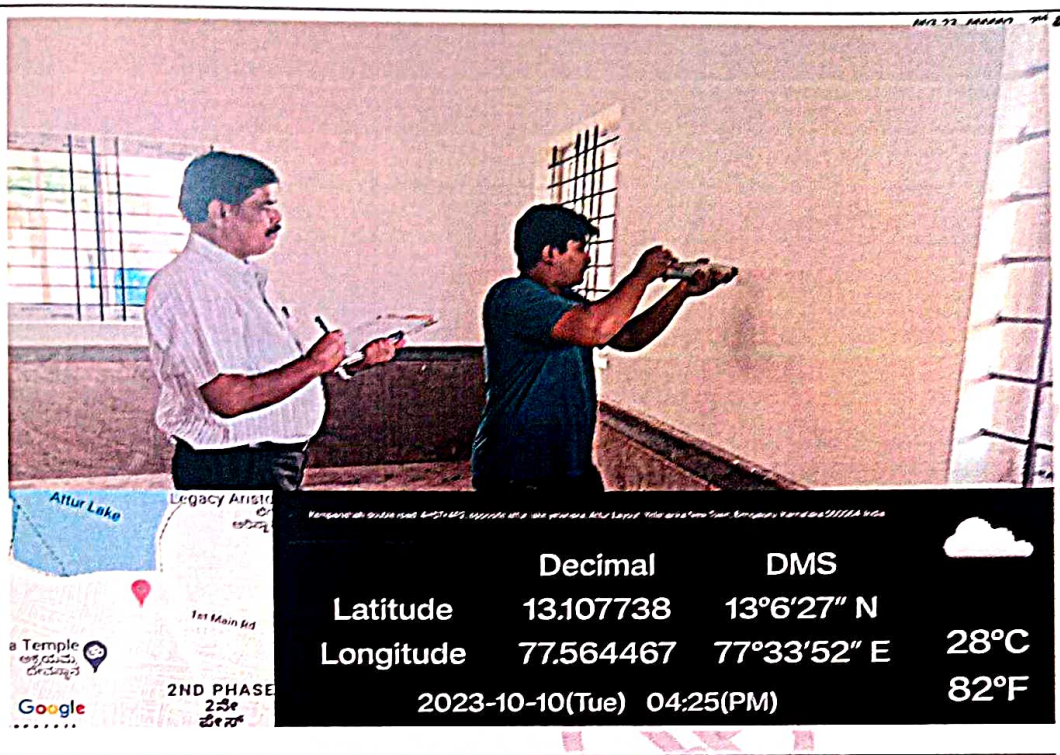

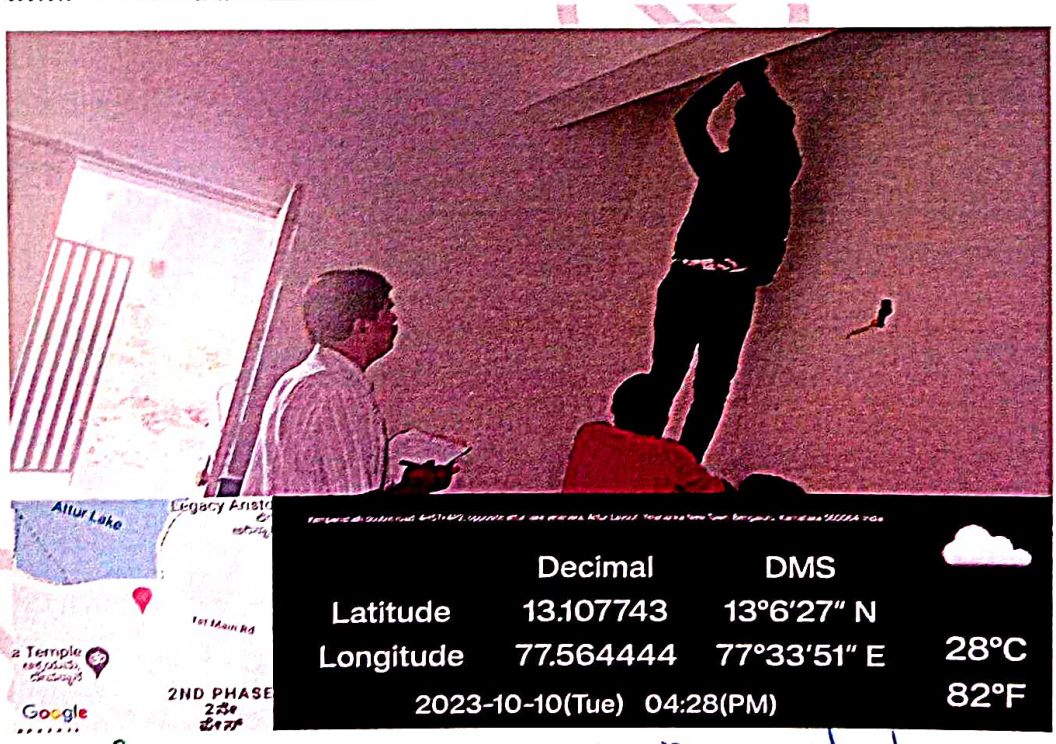

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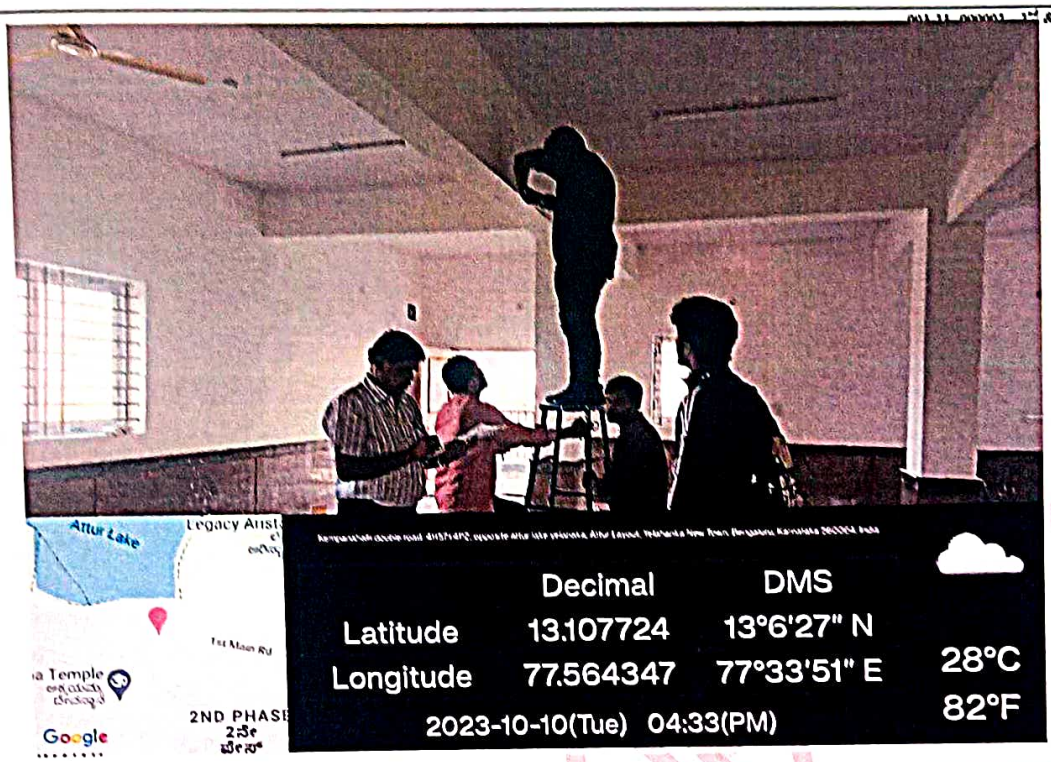

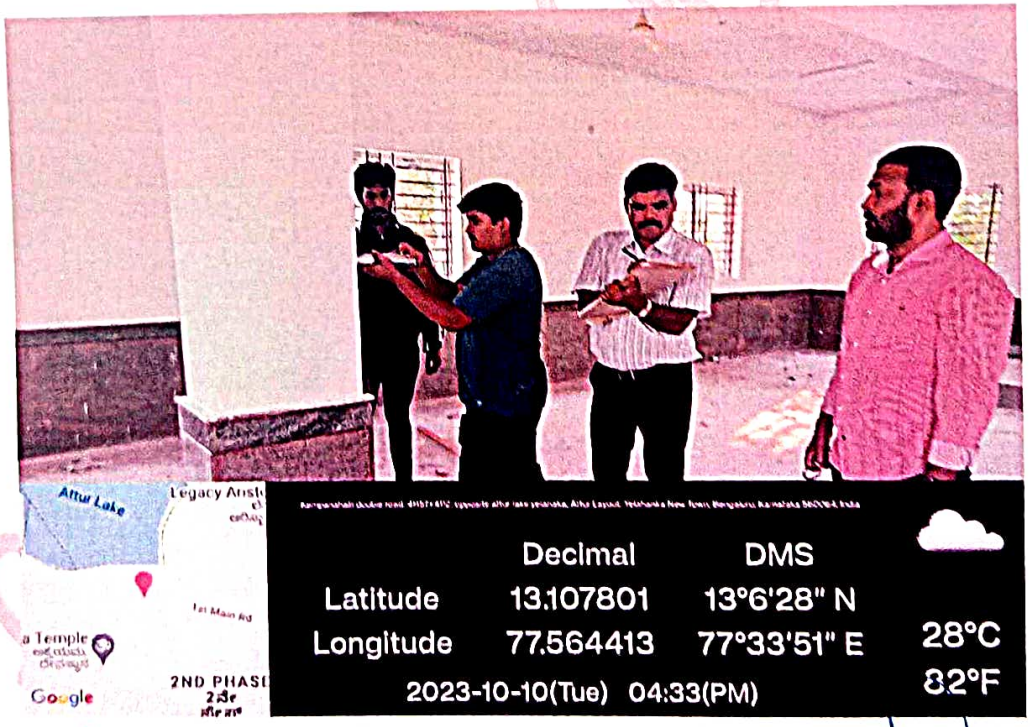

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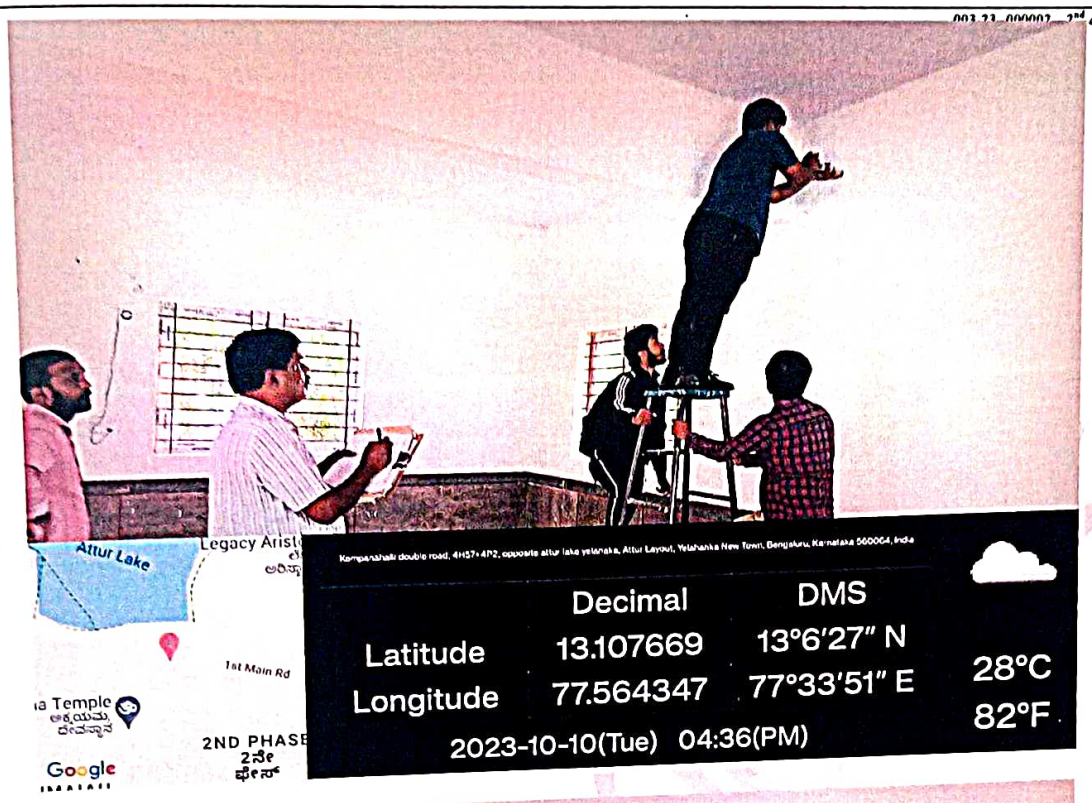

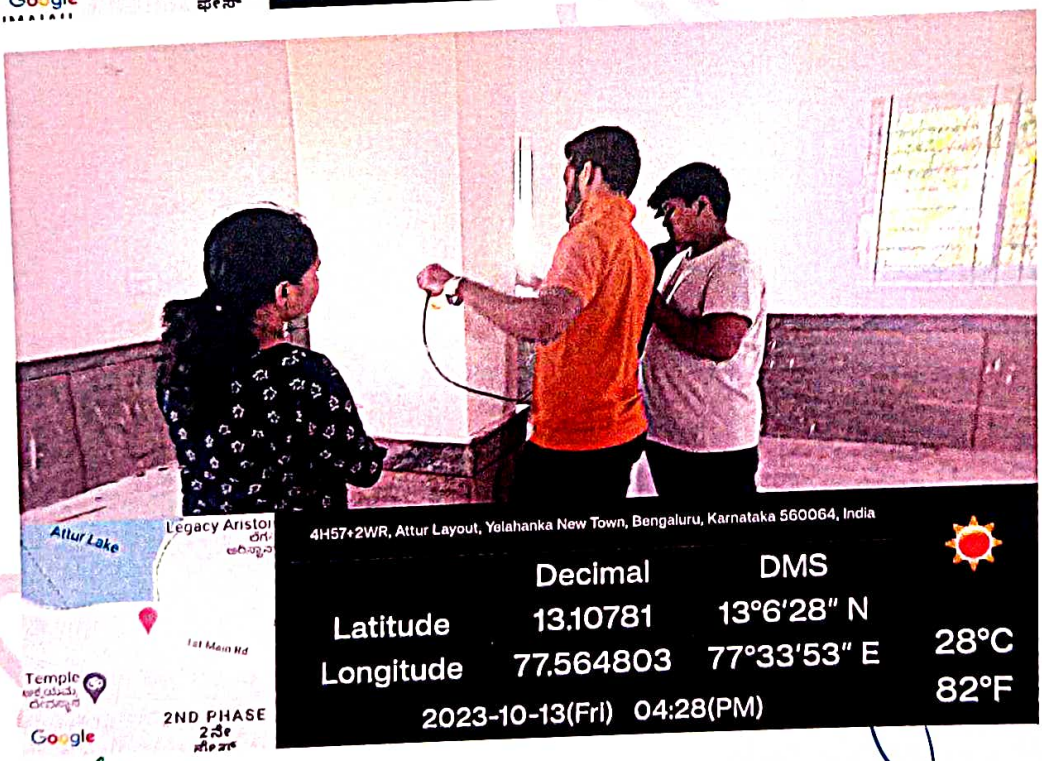

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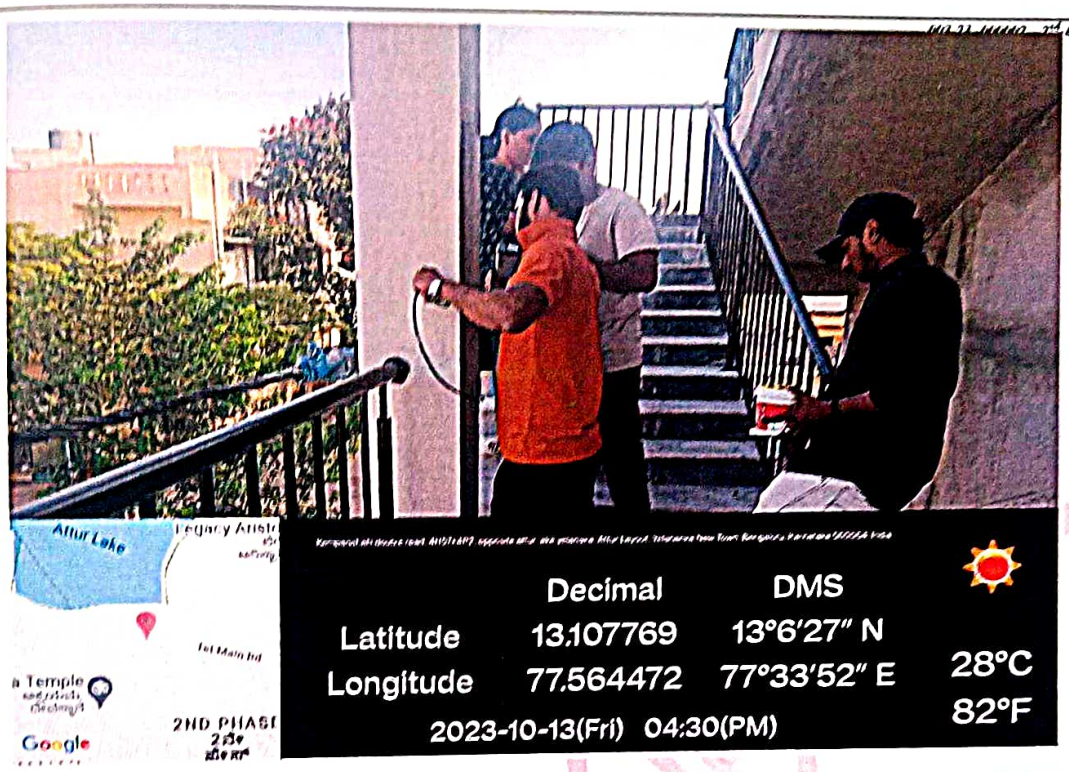

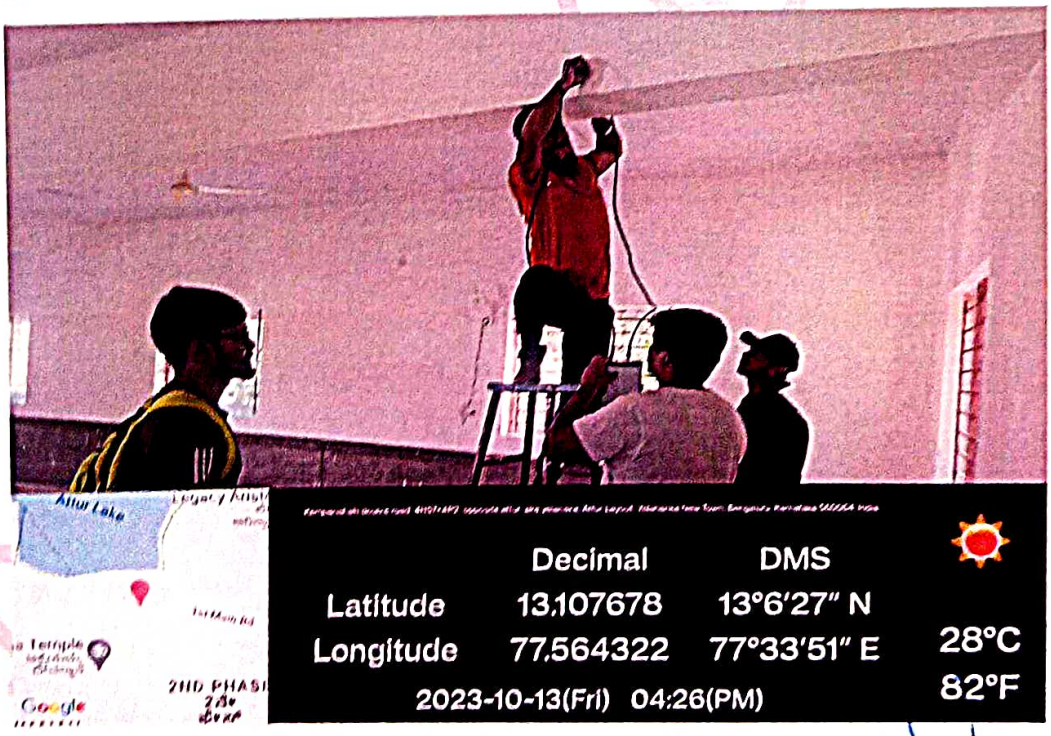

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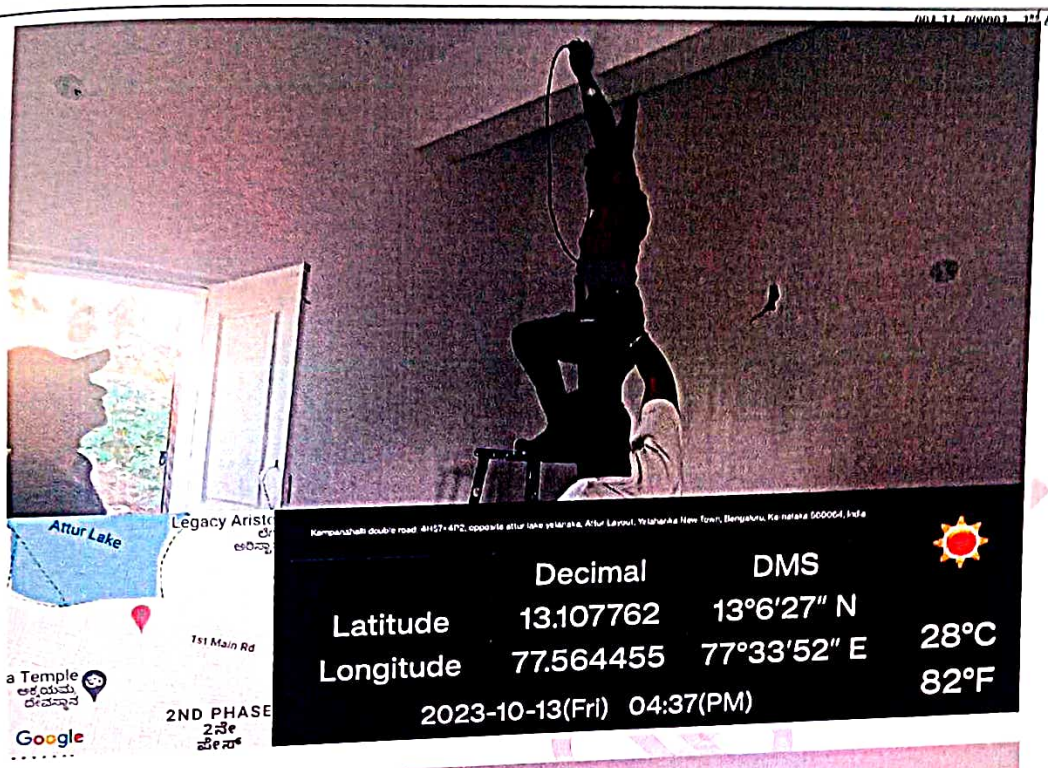

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